5.7 BAND EDGES MEASUREMENT

5.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2005

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set RBW of spectrum analyzer to 1MHz and VBW of spectrum analyzer to 10Hz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

5.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.7.4 TEST RESULTS (WITH ANTENNA 1)

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

NOTE (Peak):

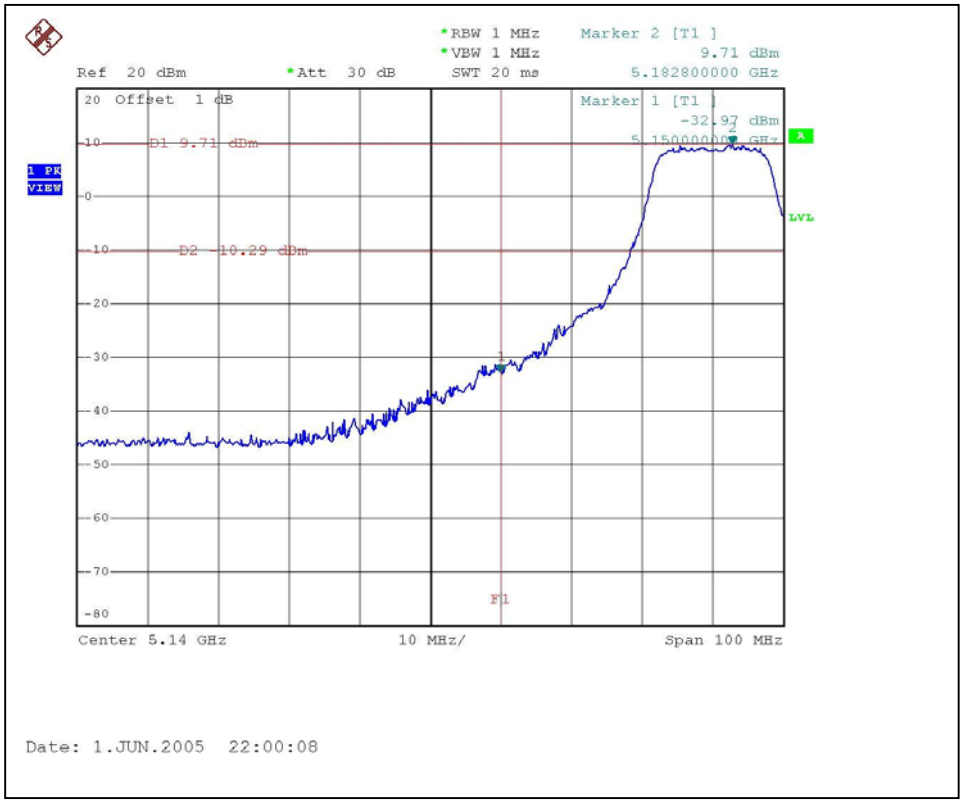
The band edge emission plot on the following first page shows 42.68dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 106.4dBuV/m (Peak), so the maximum field strength in restrict band is 106.4-42.68=63.72dBuV/m which is under 74dBuV/m limit.

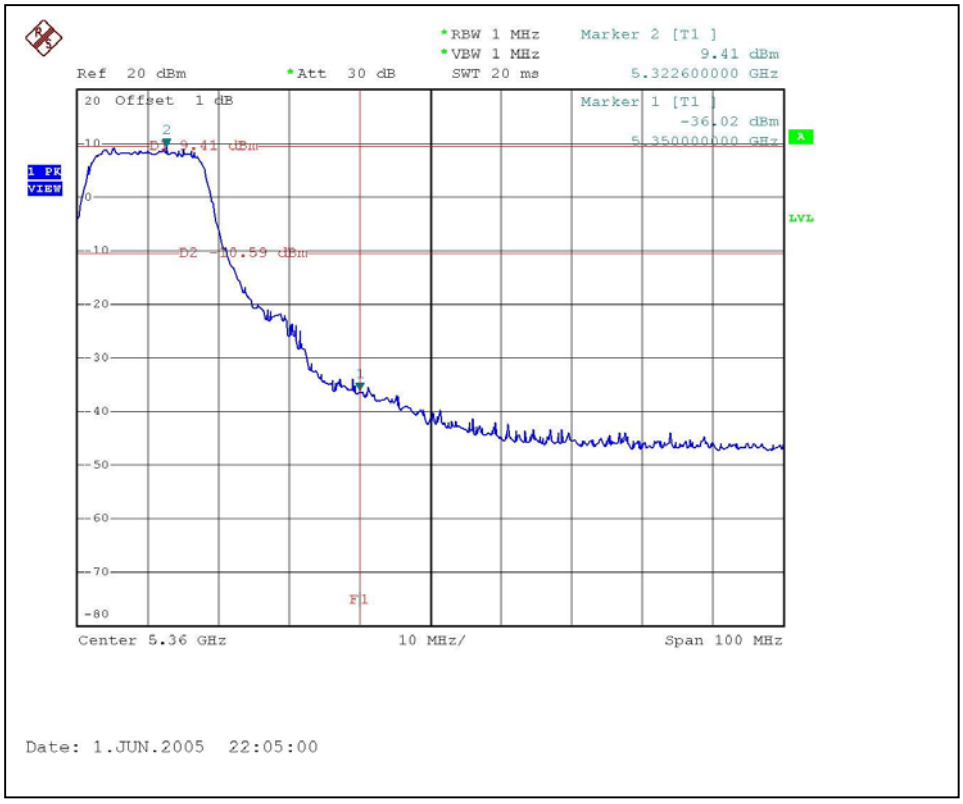
The band edge emission plot on the following first page shows 45.43dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 108.2dBuV/m (Peak), so the maximum field strength in restrict band is 108.2-45.43=62.77dBuV/m which is under 74dBuV/m limit.

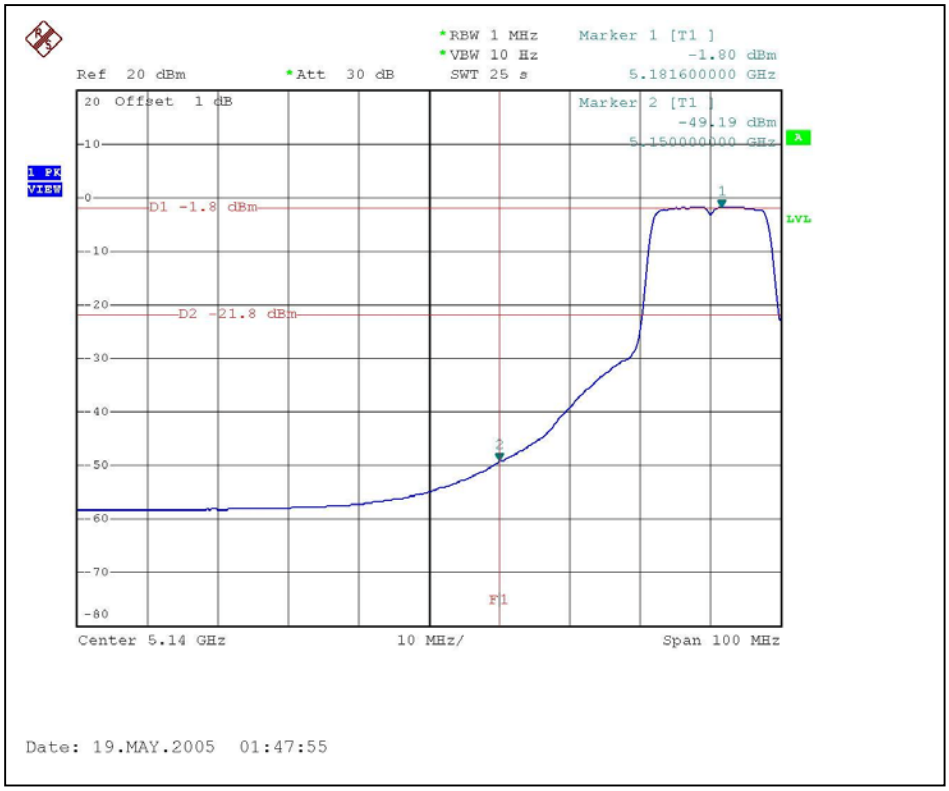
NOTE (Average):

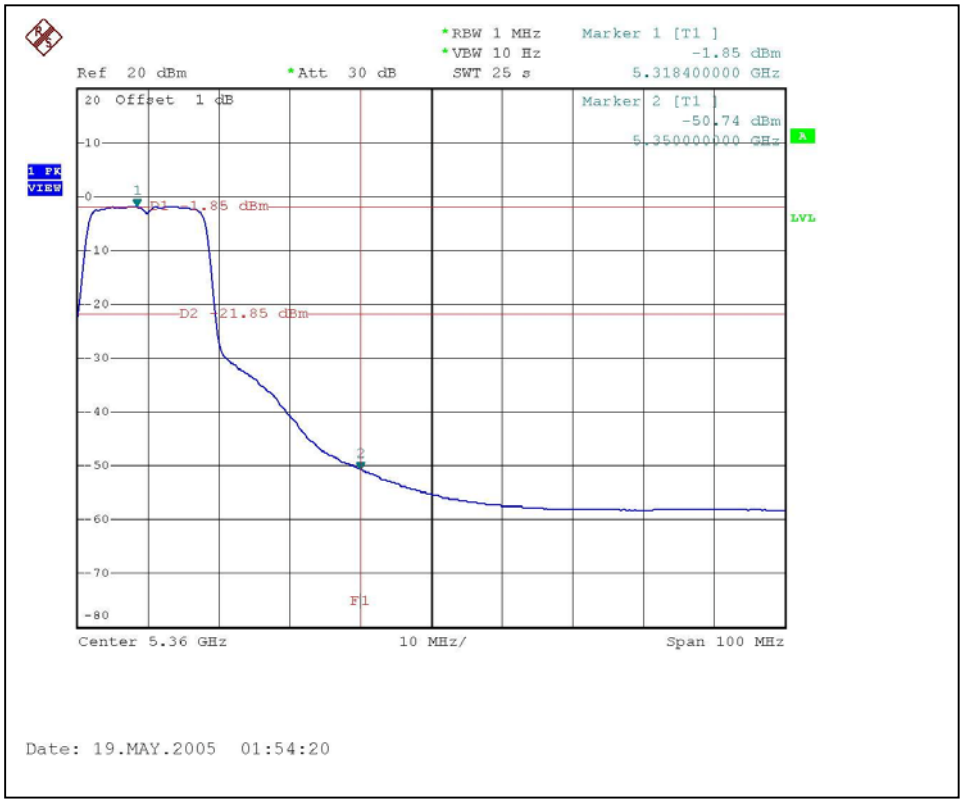
The band edge emission plot on the following second page shows 47.39dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 98.3dBuV/m (Average), so the maximum field strength in restrict band is 98.3-47.39=50.91dBuV/m which is under 54dBuV/m limit.

The band edge emission plot on the following second page shows 48.89dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 98.8dBuV/m (Average), so the maximum field strength in restrict band is 98.8-48.89=49.91dBuV/m which is under 54dBuV/m limit.


*RBW 1 MHz
*VBW 1 MHz
SWT 20 ms
Marker 2 [T1]
9.71 dBm
5.182800000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-32.97 dBm
D1 9.71 dBm
D2 -10.29 dBm
1 PK VIEW
LVL
Center 5.14 GHz
10 MHz/
Span 100 MHz
Date: 1.JUN.2005 22:00:08


*RBW 1 MHz
*VBW 1 MHz
SWT 20 ms
Marker 2 [T1]
9.41 dBm
5.322600000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-36.02 dBm
D2 -10.59 dBm
1 PK VIEW
LVL
Center 5.36 GHz
10 MHz/
Span 100 MHz
Date: 1.JUN.2005 22:05:00


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-1.80 dBm
5.181600000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-49.19 dBm
5.150000000 GHz
1 PK VIEW
D1 -1.8 dBm
D2 -21.8 dBm
LVL
F1
Center 5.14 GHz
10 MHz/
Span 100 MHz
Date: 19.MAY.2005 01:47:55


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-1.85 dBm
5.318400000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-50.74 dBm
5.350000000 GHz
1 PK VIEW
D1 -1.85 dBm
D2 -21.85 dBm
LVL
F1
Center 5.36 GHz
10 MHz/
Span 100 MHz
Date: 19.MAY.2005 01:54:20

5.7.5 TEST RESULTS (WITH ANTENNA 2)

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

NOTE (Peak):

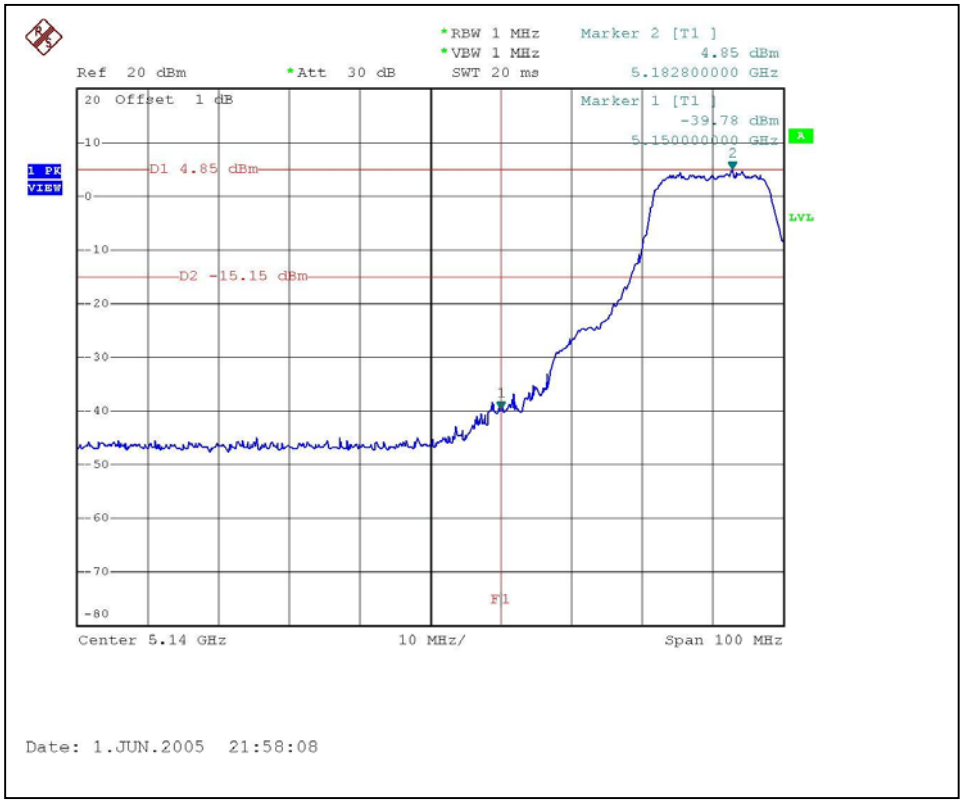
The band edge emission plot on the following first page shows 44.63dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 106.1dBuV/m (Peak), so the maximum field strength in restrict band is 106.1-44.63=61.47dBuV/m which is under 74dBuV/m limit.

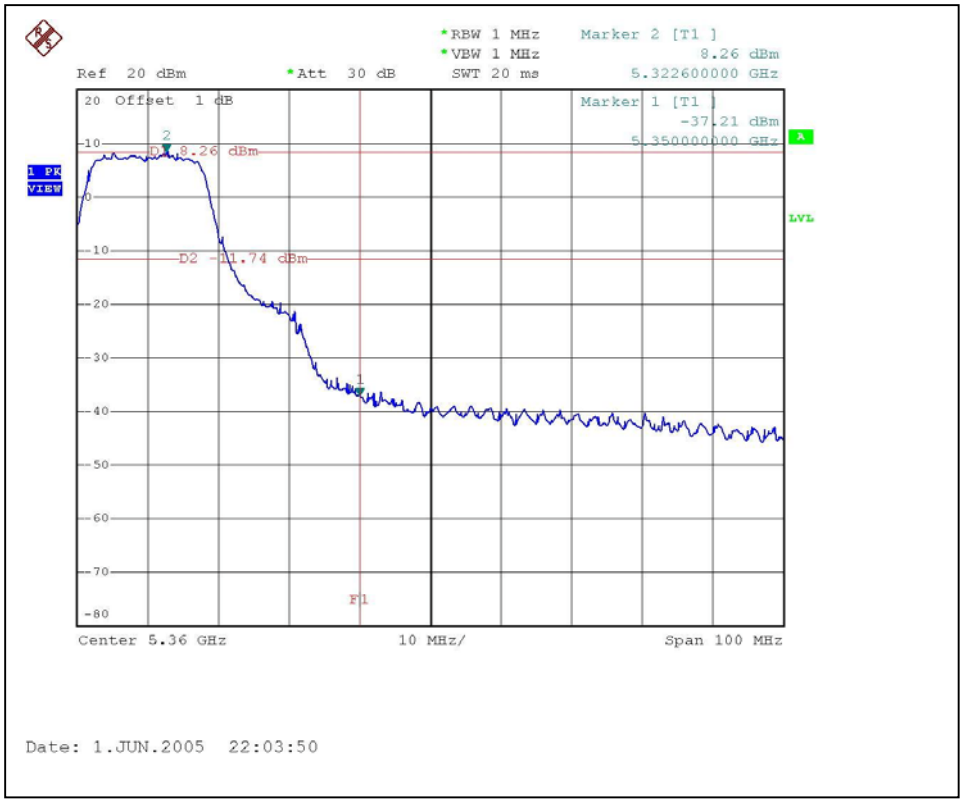
The band edge emission plot on the following first page shows 45.47dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 109.6dBuV/m (Peak), so the maximum field strength in restrict band is 109.6-45.47=64.13dBuV/m which is under 74dBuV/m limit.

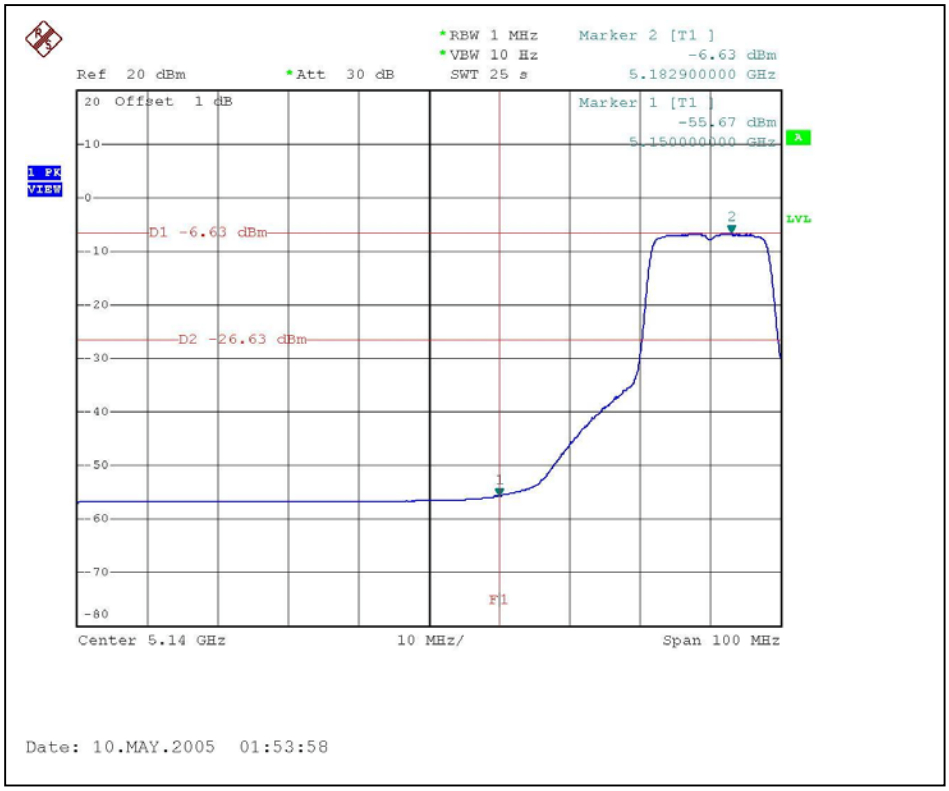
NOTE (Average):

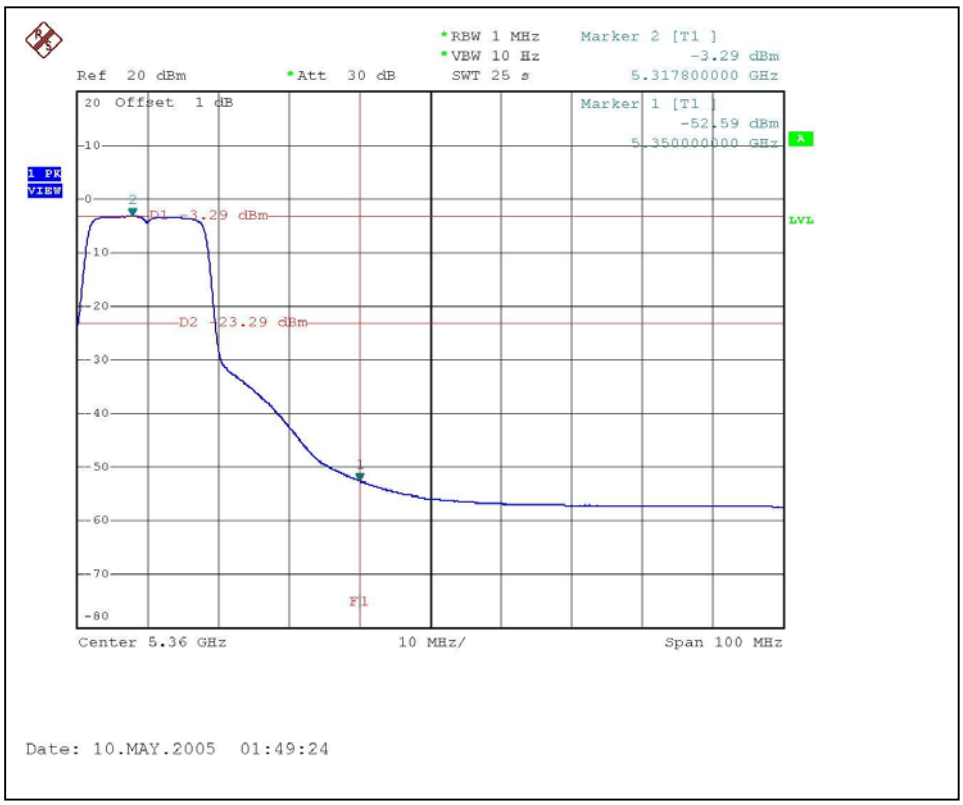
The band edge emission plot on the following second page shows 49.04dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 97.3dBuV/m (Average), so the maximum field strength in restrict band is 97.3-49.04=48.26dBuV/m which is under 54dBuV/m limit.

The band edge emission plot on the following second page shows 49.3dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 101.2dBuV/m (Average), so the maximum field strength in restrict band is 101.2-49.3=51.9dBuV/m which is under 54dBuV/m limit.


*RBW 1 MHz
*VBW 1 MHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
Marker 2 [T1]
4.85 dBm
5.182800000 GHz
Marker 1 [T1]
-39.78 dBm
5.150000000 GHz
20 Offset 1 dB
D1 4.85 dBm
D2 -15.15 dBm
1 PK VIEW
LVL
Center 5.14 GHz
10 MHz/
Span 100 MHz
Date: 1.JUN.2005 21:58:08


*RBW 1 MHz
*VBW 1 MHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
Marker 2 [T1]
8.26 dBm
5.322600000 GHz
Marker 1 [T1]
-37.21 dBm
5.350000000 GHz
20 Offset 1 dB
D1 8.26 dBm
D2 -11.74 dBm
1 PK VIEW
LVL
Center 5.36 GHz
10 MHz/
Span 100 MHz
Date: 1.JUN.2005 22:03:50


*RBW 1 MHz
*VBW 10 Hz
Ref 20 dBm
*Att 30 dB
SWT 25 s
Marker 2 [T1]
-6.63 dBm
5.182900000 GHz
20 Offset 1 dB
Marker 1 [T1]
-55.67 dBm
5.150000000 GHz
1 PK VIEW
D1 -6.63 dBm
D2 -26.63 dBm
LVL
Center 5.14 GHz
10 MHz/
Span 100 MHz
Date: 10.MAY.2005 01:53:58


*RBW 1 MHz
*VBW 10 Hz
Ref 20 dBm
*Att 30 dB
SWT 25 s
Marker 2 [T1]
-3.29 dBm
5.317800000 GHz
20 Offset 1 dB
Marker 1 [T1]
-52.59 dBm
5.350000000 GHz
1 PK VIEW
D1 -3.29 dBm
D2 -23.29 dBm
LVL
Center 5.36 GHz
10 MHz/
Span 100 MHz
Date: 10.MAY.2005 01:49:24

FOR FREQUENCY 5.725~5.850GHZ

5.8 6DB BANDWIDTH MEASUREMENT

5.8.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.8.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2005

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

5.8.4 DEVIATION FROM TEST STANDARD

No deviation

5.8.5 TEST SETUP

5.8.6 EUT OPERATING CONDITIONS

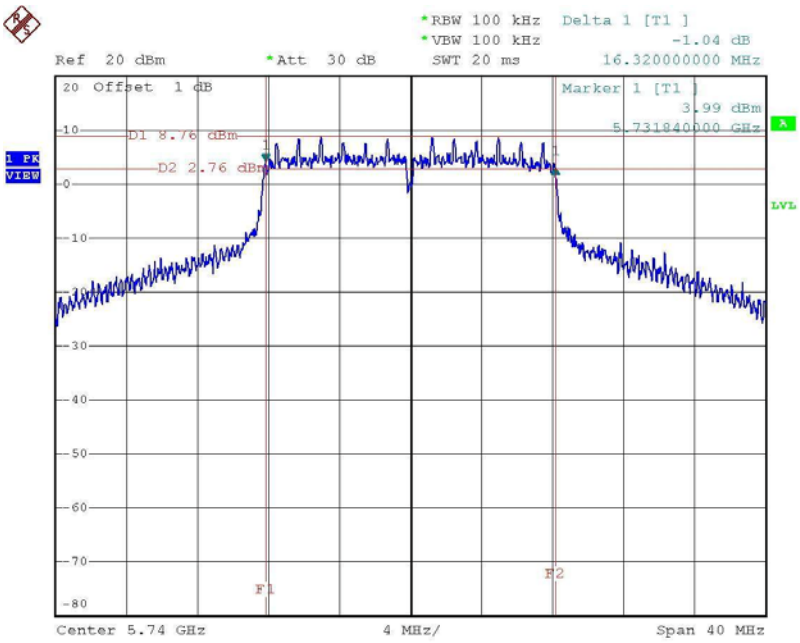
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.8.7 TEST RESULTS (WITH ANTENNA 1)

EUT	Wireless Access Point AP7215	**MODEL**	NTE310AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23 deg. C, 68%RH, 965 hPa
TEST MODE	Normal	**TEST BY**	Rex Huang

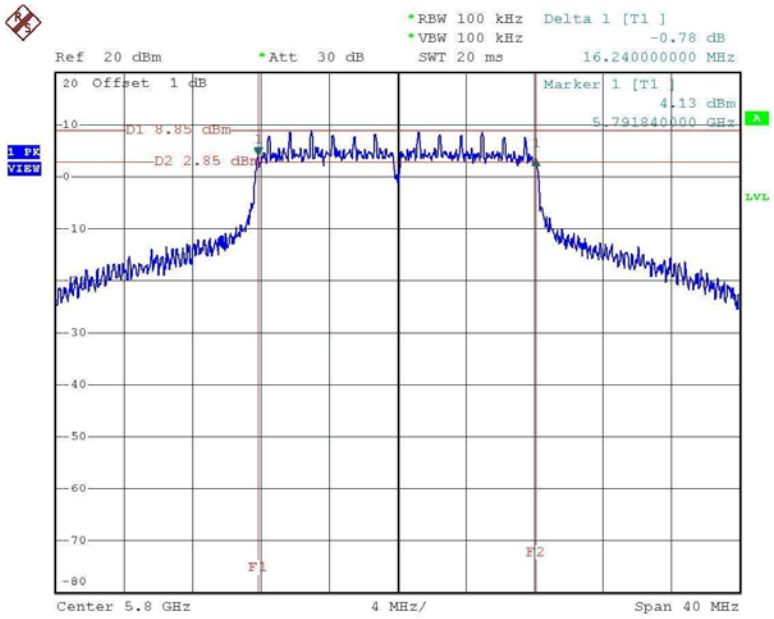
CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
9	5740	16.32	0.5	PASS
12	5800	16.24	0.5	PASS
14	5840	16.32	0.5	PASS

CH9



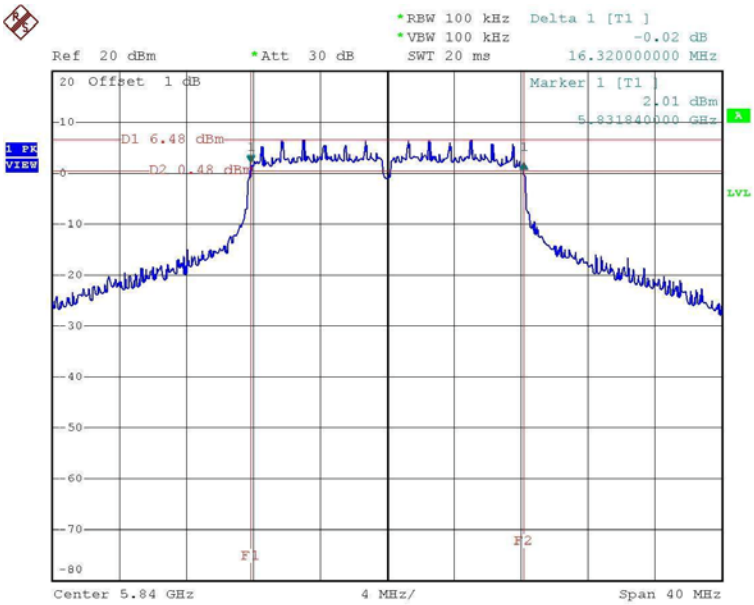
Date: 18.MAY.2005 00:50:58

CH12



Date: 18.MAY.2005 00:53:43

CH14



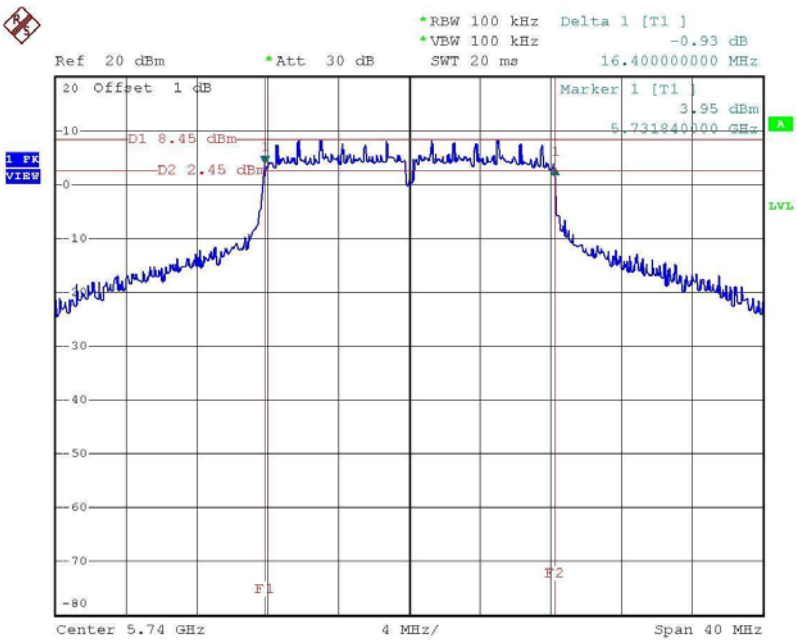
Date: 17.MAY.2005 23:10:31

5.8.8 TEST RESULTS (WITH ANTENNA 2)

EUT	Wireless Access Point AP7215	**MODEL**	NTE310AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23 deg. C, 68%RH, 965 hPa
TEST MODE	Normal	**TEST BY**	Rex Huang

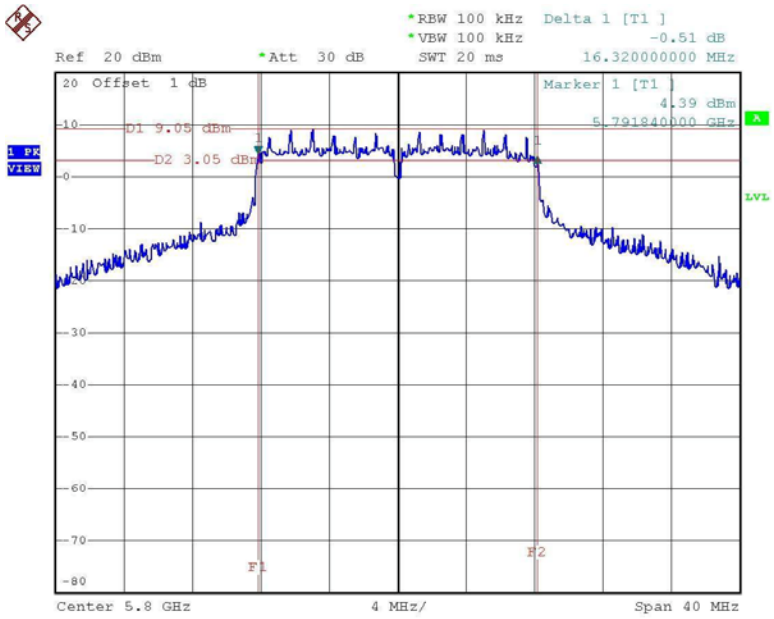
CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
9	5740	16.40	0.5	PASS
12	5800	16.32	0.5	PASS
14	5840	16.24	0.5	PASS

CH9



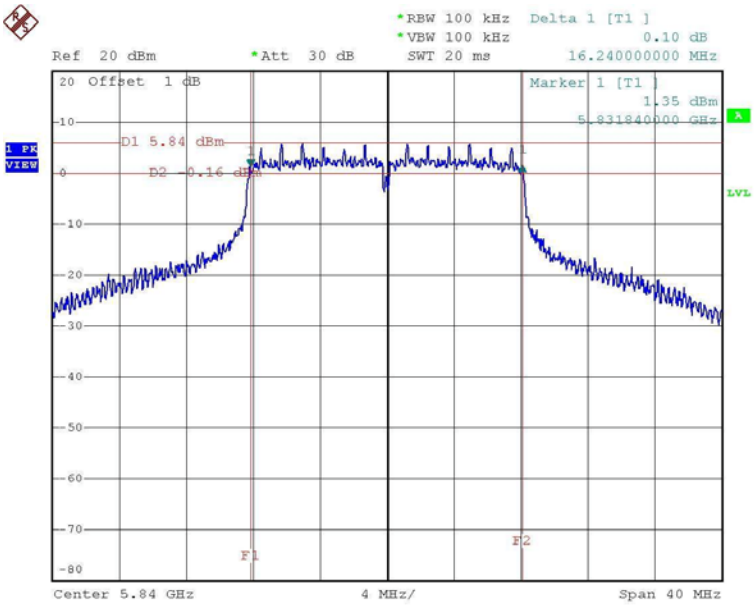
Date: 17.MAY.2005 23:18:29

CH12



Date: 17.MAY.2005 23:23:51

CH14



Date: 10.MAY.2005 00:55:36

5.9 MAXIMUM PEAK OUTPUT POWER

5.9.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

Note:

1. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

5.9.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2005

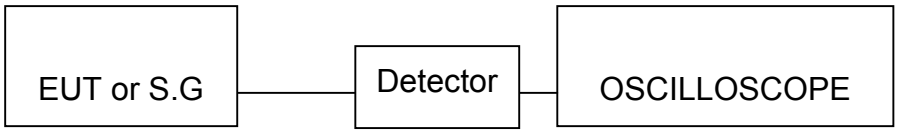
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.9.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
Set the spectrum bandwidth span to view the entire spectrum.
Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=30KHz).
The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

5.9.4 TEST SETUP



5.9.5 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.9.6 TEST RESULTS (WITH ANTENNA 1)

EUT	Wireless Access Point AP7215	**MODEL**	NTE310AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23 deg. C, 68%RH, 965 hPa
TEST MODE	Normal	**TEST BY**	Rex Huang

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
9	5740	22.43	30	PASS
12	5800	22.12	30	PASS
14	5840	20.14	30	PASS

5.9.7 TEST RESULTS (WITH ANTENNA 2)

EUT	Wireless Access Point AP7215	**MODEL**	NTE310AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23 deg. C, 68%RH, 965 hPa
TEST MODE	Normal	**TEST BY**	Rex Huang

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
9	5740	22.34	30	PASS
12	5800	22.06	30	PASS
14	5840	20.10	30	PASS

5.10 POWER SPECTRAL DENSITY MEASUREMENT

5.10.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.10.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2005

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.10.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

5.10.4 DEVIATION FROM TEST STANDARD

No deviation

5.10.5 TEST SETUP

5.10.6 EUT OPERATING CONDITION

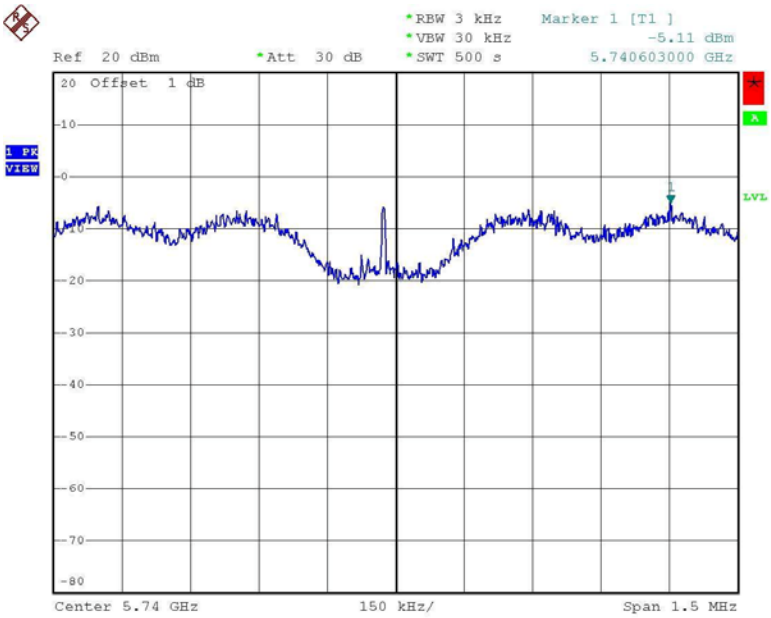
Same as Item 4.3.6

5.10.7 TEST RESULTS (WITH ANTENNA 1)

EUT	Wireless Access Point AP7215	**MODEL**	NTE310AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23 deg. C, 68%RH, 965 hPa
TEST MODE	Normal	**TEST BY**	Rex Huang

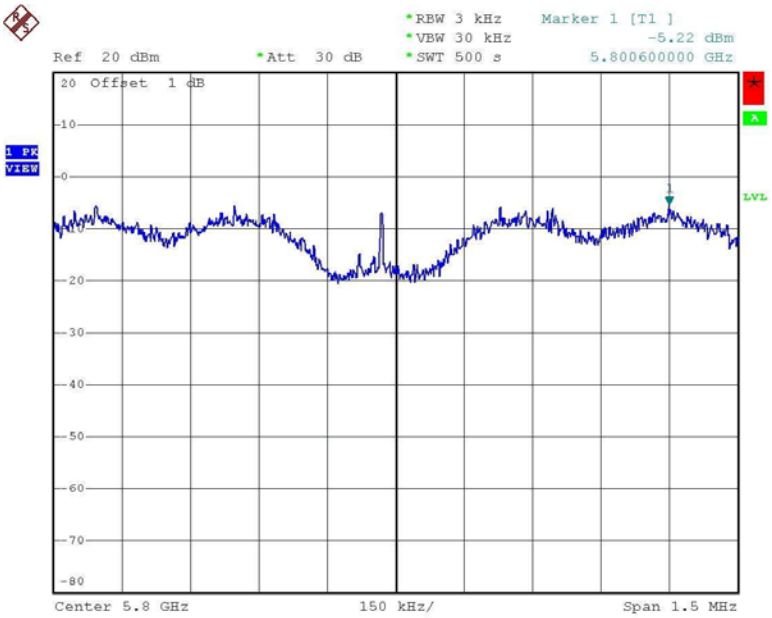
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
9	5740	-5.11	8	PASS
12	5800	-5.22	8	PASS
14	5840	-7.75	8	PASS

CH9



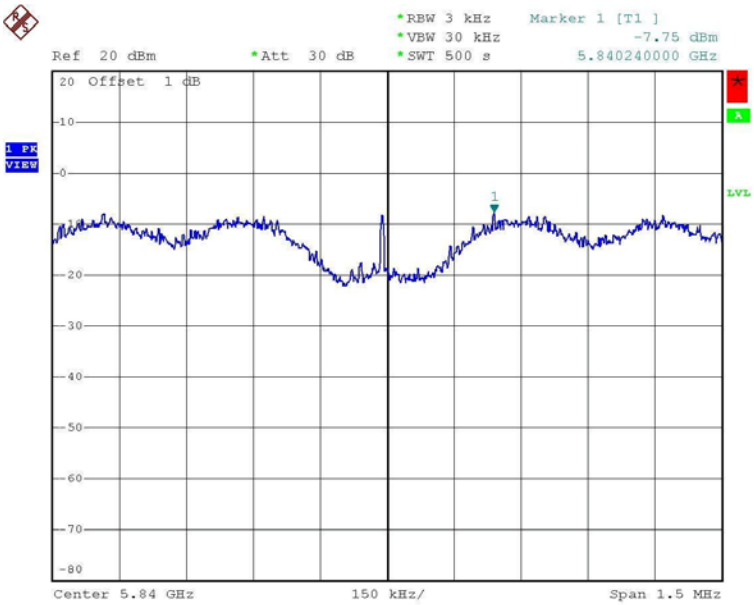
Date: 18.MAY.2005 01:01:59

CH12



Date: 18.MAY.2005 01:02:53

CH14



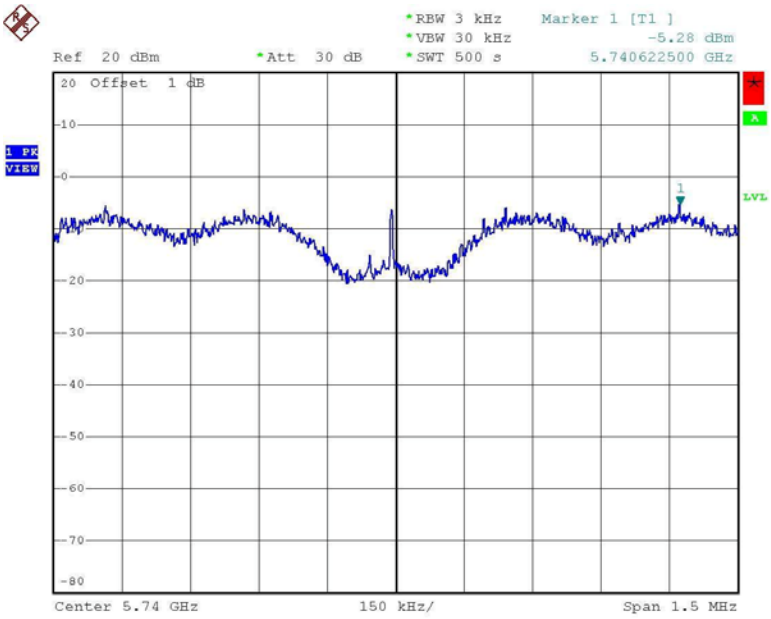
Date: 17.MAY.2005 23:39:07

5.10.8 TEST RESULTS (WITH ANTENNA 2)

EUT	Wireless Access Point AP7215	**MODEL**	NTE310AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23 deg. C, 68%RH, 965 hPa
TEST MODE	Normal	**TEST BY**	Rex Huang

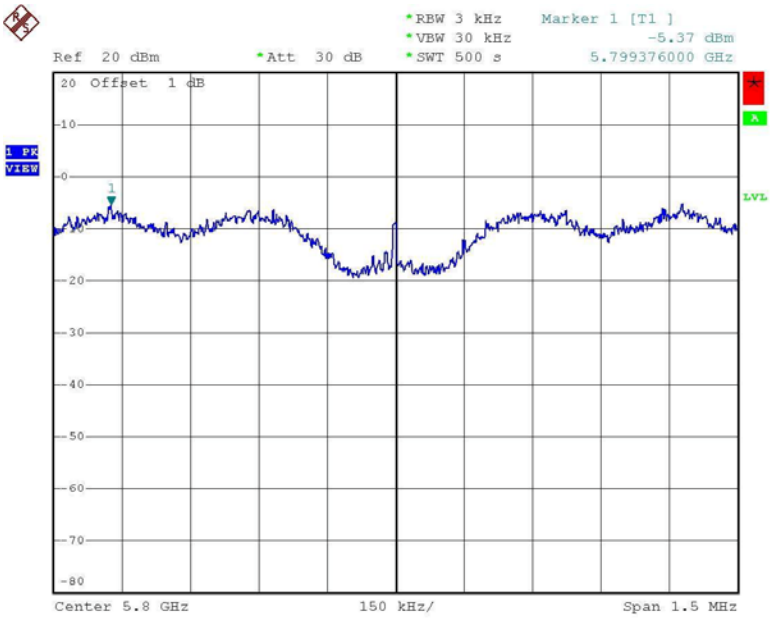
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
9	5740	-5.28	8	PASS
12	5800	-5.37	8	PASS
14	5840	-6.74	8	PASS

CH9



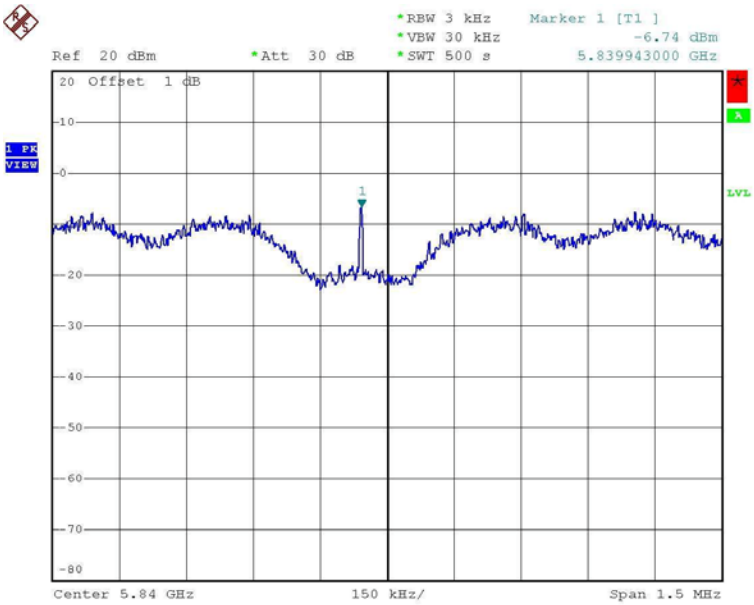
Date: 17.MAY.2005 23:34:55

CH12



Date: 17.MAY.2005 23:44:10

CH14



Date: 10.MAY.2005 02:07:20

5.11 BAND EDGES MEASUREMENT

5.11.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

5.11.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2005

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.11.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

5.11.4 DEVIATION FROM TEST STANDARD

No deviation

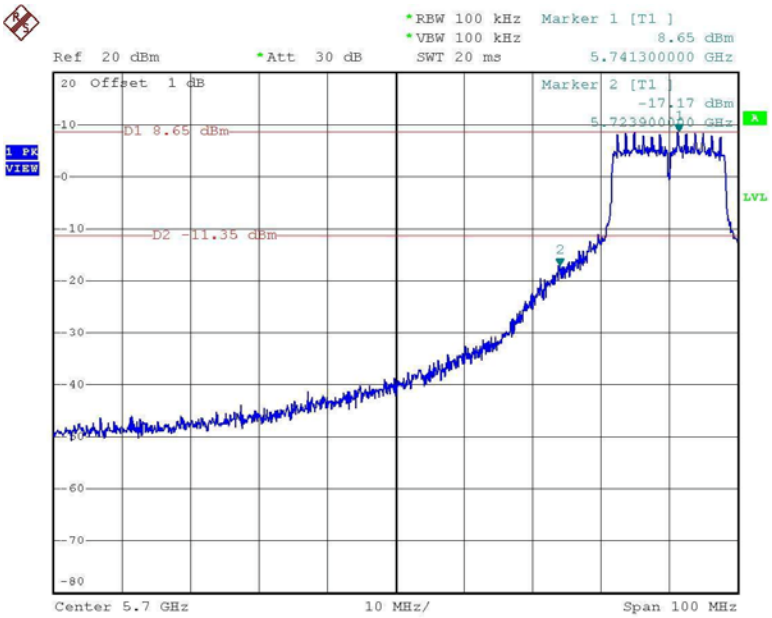
5.11.5 EUT OPERATING CONDITION

Same as Item 4.3.6

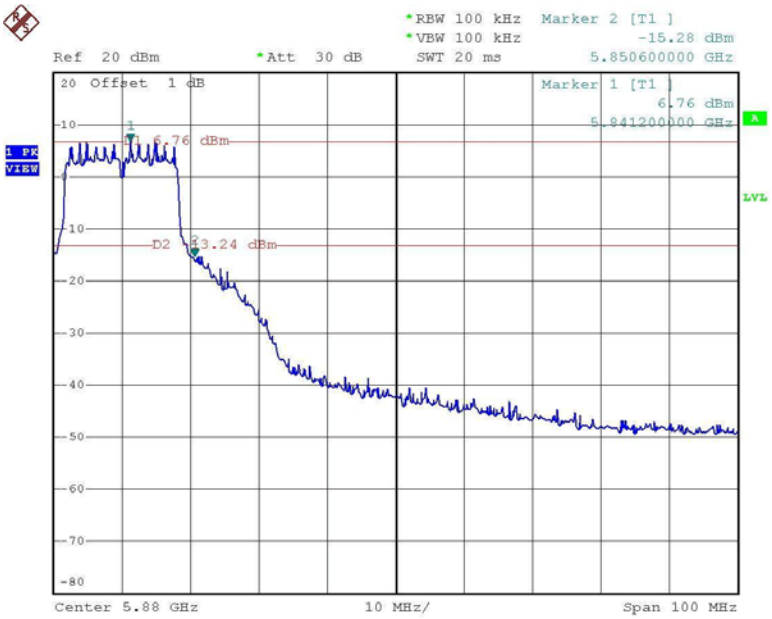
5.11.6 TEST RESULTS (WITH ANTENNA 1)

The spectrum plots are attached on the following page. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

Normal Mode



Date: 18.MAY.2005 00:44:24

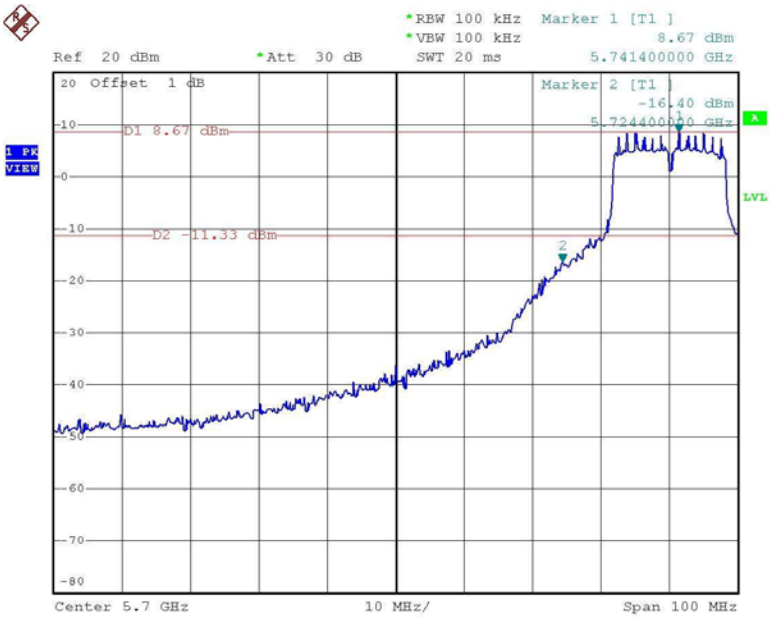


Date: 17.MAY.2005 23:05:37

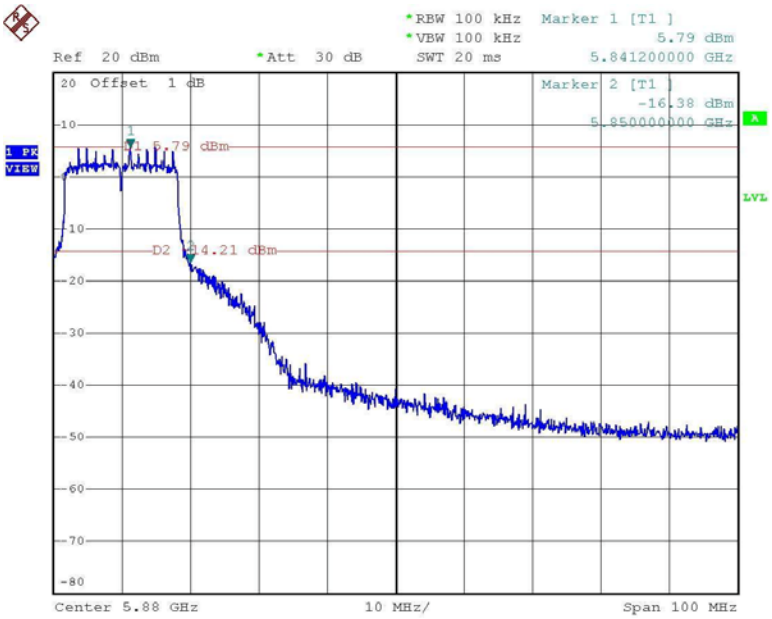
5.11.7 TEST RESULTS (WITH ANTENNA 2)

The spectrum plots are attached on the following page. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

Normal Mode



Date: 17.MAY.2005 23:02:18



Date: 10.MAY.2005 00:44:33

5.12 ANTENNA REQUIREMENT

5.12.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.407(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.12.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product are Dual-Band Omni-Directional antenna with RA MMCX Plug connector and Hige Gain Panel Directional antenna with rp-SMA and SMA connector.

Dual-Band Omni-Directional antenna: The maximum Gain of the antenna is 6.5dBi.
Hige Gain Panel Directional antenna: The maximum Gain of the antenna is 14.0dBi.

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST (WITH ANTENNA 1)

CONDUCTED EMISSION TEST (WITH ANTENNA 2)

RADIATED EMISSION TEST (WITH ANTENNA 1)

RADIATED EMISSION TEST (WITH ANTENNA 2)

7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025:

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB, GOST-ASIA (MOU)
Russia	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.